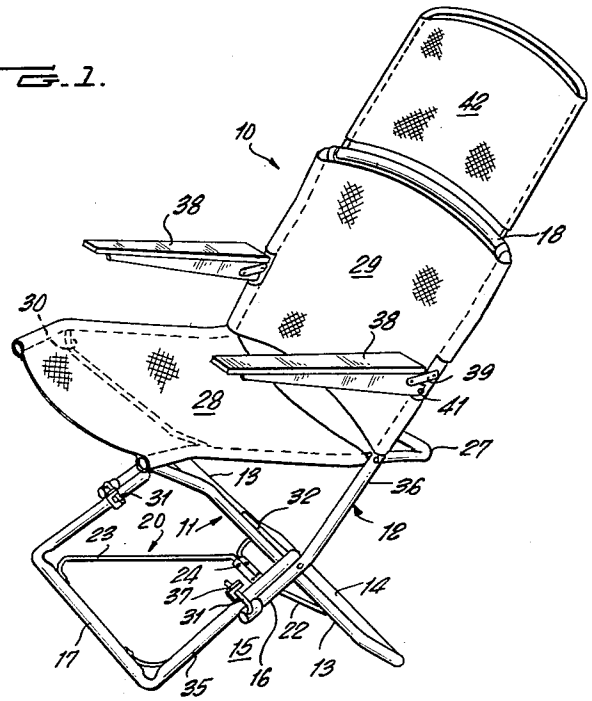
Oct. 27, 1964 J. L. STABLEFORD 3,154,344

FOLDABLE ROCKING CHAIR

Filed June 4, 1962 4 Sheets-Sheet 1

FIG. 1.



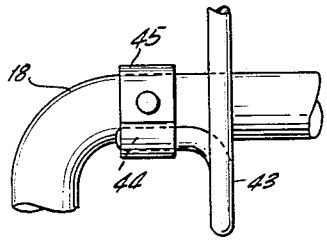




FIG. 3.

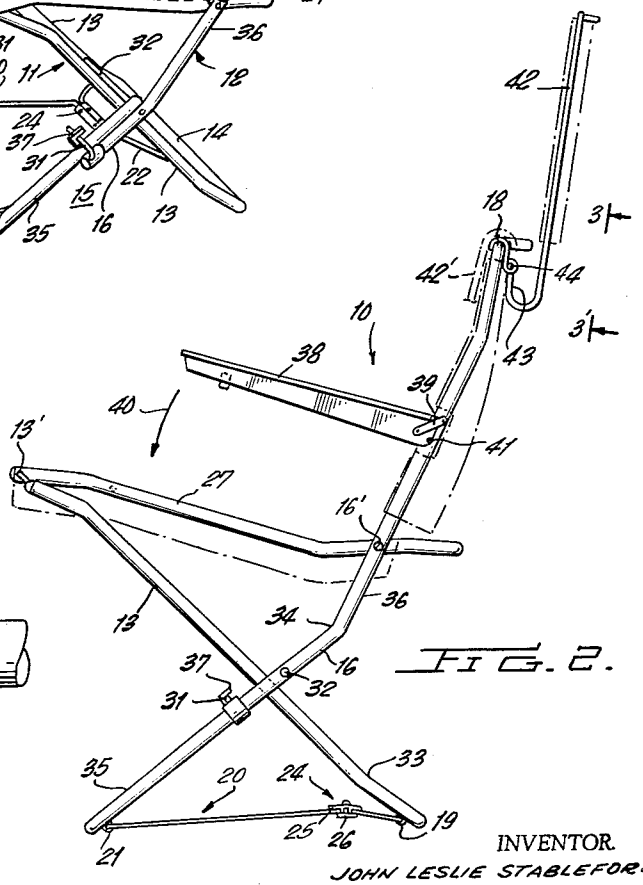



FIG. 2.

INVENTOR.
JOHN LESLIE STABLEFORD

BY

OSTROLENK, FABER, GERB & SOFFEN
ATTORNEYS

Oct. 27, 1964 J. L. STABLEFORD 3,154,344

FOLDABLE ROCKING CHAIR

Filed June 4, 1962 4 Sheets-Sheet 2

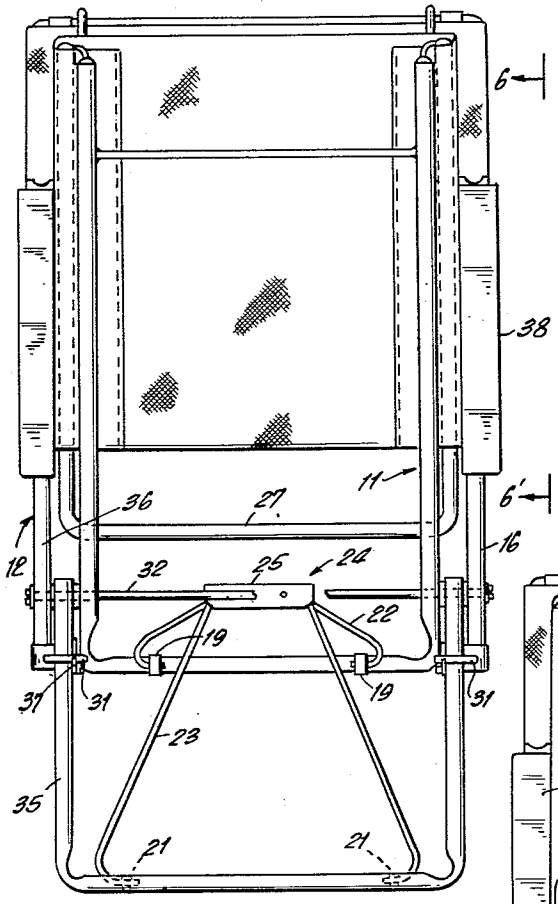



FIG. 4.

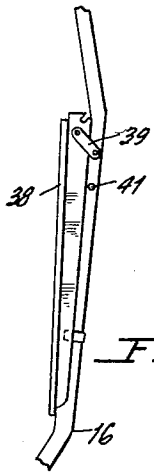



FIG. 6.

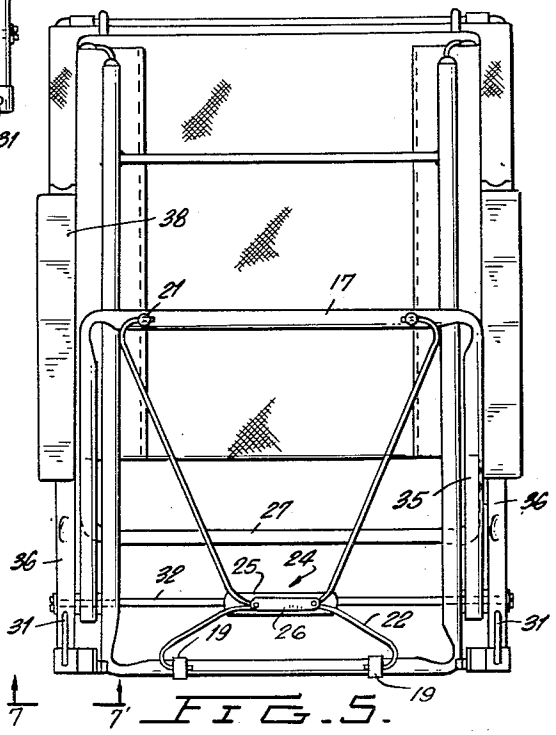



FIG. 5.

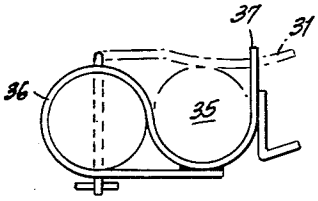



FIG. 7.

INVENTOR.
JOHN LESLIE STABLEFORD

BY

OSTROLENK, FABER, GERB & SOFFEN
ATTORNEYS

Oct. 27, 1964 J. L. STABLEFORD 3,154,344

FOLDABLE ROCKING CHAIR

Filed June 4, 1962 4 Sheets-Sheet 3

FIG. 5A.

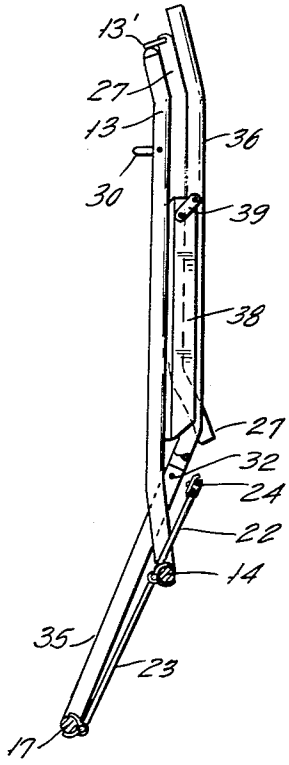



FIG. 5B.

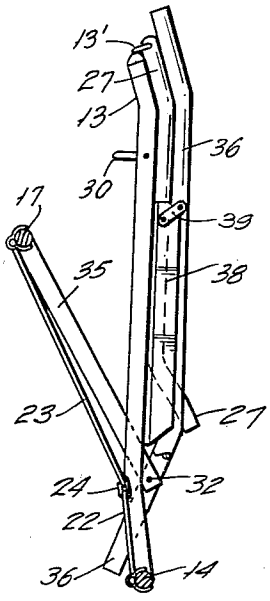
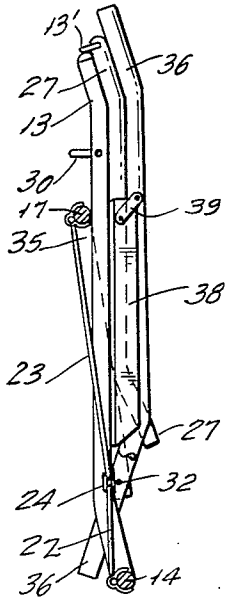



FIG. 5C.




INVENTOR.
JOHN LESLIE STABLEFORD

BY

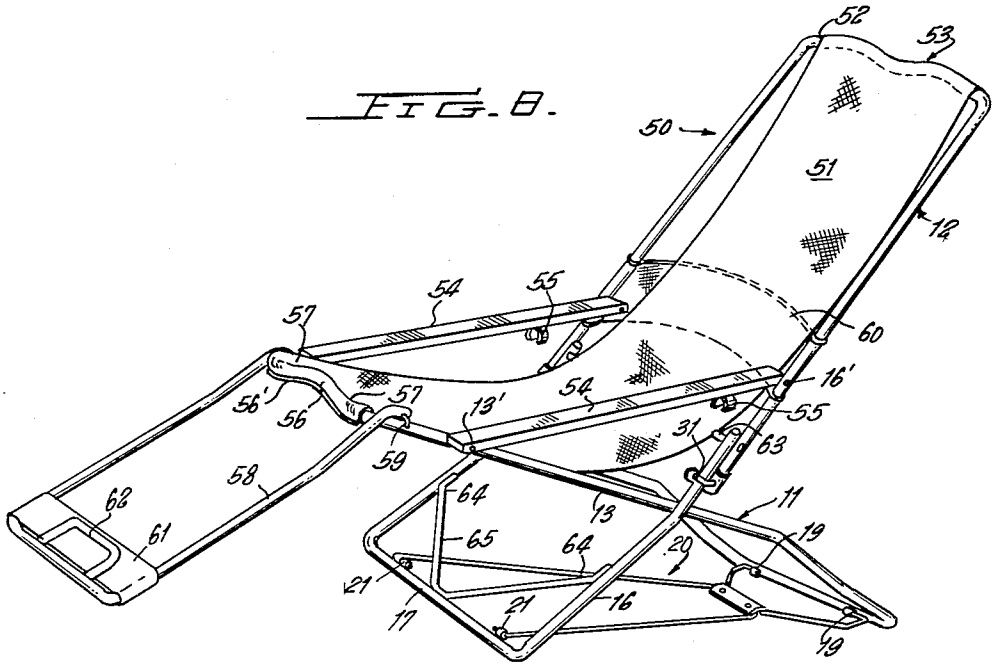
OSTROLENK, FABER, GERB & SOFFEN
ATTORNEYS

Oct. 27, 1964 J. L. STABLEFORD 3,154,344

FOLDABLE ROCKING CHAIR

Filed June 4, 1962 4 Sheets-Sheet 4

FIG. 8.



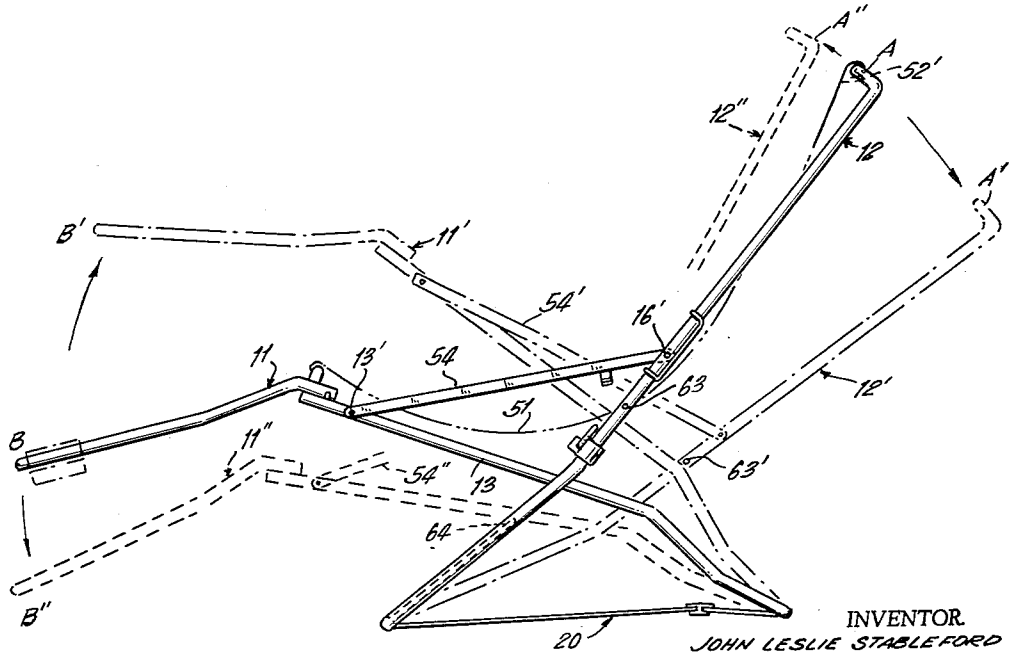




FIG. 9.

INVENTOR.
JOHN LESLIE STABLEFORD

BY

OSTROLENK, FABER, GERB & SOFFEN
ATTORNEYS

United States Patent Office 3,154,344 Patented Oct. 27, 1964



3,154,344

# FOLDABLE ROCKING CHAIR

John Leslie Stableford, 1 Stebbing St., London W. 11, England

Filed June 4, 1962, Ser. No. 199,840
6 Claims. (Cl. 297—18)

This invention relates to furniture and more particularly to foldable rocking chairs.

In this specification and the claims appended thereto, the term chair is intended to include chairs generally, including deck chairs, garden chairs or beach chairs and chaise lounges.

Rocking chairs may be classified within one of two general types, the orthodox type in which the rocking action is obtained by supporting the chair structure on curved rockers which roll on the ground as the chair rocks bodily, and the type in which the rocking action is produced by the articulated structure of the chair, the positions of which are varied in response to change in the position of the center of gravity of the user. This invention is concerned with chairs of the latter type.

Heretofore known chairs of the articulated or "rockerless" type have possessed several disadvantages, including a relatively poor rocking action, necessitating considerable effort on the part of the user and, usually, involving a discontinuous or jerky response to shifting of the user's center of gravity. Moreover, as a consequence of the rocking action of such chairs, there usually results a bodily shifting of the ground engaging parts of the chair, producing a phenomenon characterized as "walking" which results in damage to the ground or other surface upon which the chair is supported. Such chairs are also quite bulky and do not readily fold or collapse to a convenient size or shape for transport or storage.

It is among the objects of the present invention to provide a foldable rocking chair of the "rockerless" type, which overcomes the aforesaid disadvantages of known chair structures, provides a smooth rocking action, does not "walk" and may readily be folded into a compact assembly.

It is a further object of the invention to provide such a chair for use as an upright chair, which is light, simply constructed and provides rocking action through a predetermined arc without instability of the resultant chair structure.

Another object of this invention is to provide such a chair for use as a reclining chair or chaise lounge, preferably including elements providing form fitting supports for the user's head, shoulders, thighs and legs.

Other objects and advantages of this invention will appear hereinafter.

In accordance with the invention, a chair is provided which comprises a pair of generally rectilinearly shaped frame members, each of which includes spaced substantially parallel leg elements, which elements lie in intersecting planes when the chair is disposed in its operating position, and which frame members also include substantially parallel base elements connecting the leg elements and contacting the floor, ground or other supporting surface of the chair across substantially their entire lengths. A foldable base linkage is pivotally connected to the base elements of the two frame members, the base linkage being maintained under tension when the chair is disposed in its operative position and facilitating independent rocking of the frame members about the pivotal connections between the base linkage and the respective base elements. An upper linkage is connected to the adjacent leg elements of the two frame members above the intersection of the planes defined thereby in the operating position, and front and rear stops are associated with the pair of frame members for limiting the rocking movement thereof within a predetermined arc. The base linkage, upper linkage and frame members are so proportioned relative to the stops which limit the rocking arc of the chair, to permit folding of the chair to dispose the respective frame members in substantially co-planar relationship with one frame at least partially disposed within the other.



The structure of this invention substantially eliminates the "walking" problem inherent in many prior art constructions, since the leg elements of the frame members rock about their pivotal connections with the base linkage, at a level approximating that of the ground or other supporting surface. This construction minimizes the production of torque forces, which are produced between chair leg elements and bracing elements therefor secured intermediate their lengths, which tend to exert leverage upon the chair support surface and dig into the same during rocking. Moreover, the front and rear stops of the chair construction coact with the pair of frame members and bracing linkages therefor to limit the rocking motion thereof, thus minimizing inherent dangers of the rocker construction, and guiding the relative motion of the frame members when it is desired to fold the chair, thereby insuring simple and efficient folding of the chair when the upper ends of the frame members are merely moved toward one another.

Pursuant to a further feature of the present invention, the leg elements of one or both of the frame members include portions which are slightly bent or offset with respect to one another, thereby facilitating the movement of the leg elements relative to the front and rear stops during folding of the chair; the curvature of the leg elements is such as to enable the leg elements of the two frame members to move relatively to one another into substantially the same plane. As will be described more fully hereinafter, the leg elements are so bent that upon folding the chair, they act as camming surfaces relative to the stops between which they move, camming into a common plane.

Further, in accordance with a preferred embodiment of the invention, the leg elements of one of the frame members include leading portions which are pivotally secured to the trailing portions of such elements to permit folding the leading portions into juxtaposition with the trailing portions after collapsing the chair, to thereby doubly fold the chair into a compact collapsed assembly. In order to effect such double folding, the leading portions of the aforesaid frame member are pivoted about an axis about which the base linkage also folds; in this manner both the leading portions of the leg elements and the base linkage can pivot simultaneously about the same axis to effect the double fold.

For a fuller understanding of the nature and objects of this invention, reference is made to the following detailed description of specific embodiments of the foldable rocking chair construction of the invention, taken in connection with the accompanying drawings, in which:

FIGURE 1 is a perspective view of an upright or garden chair embodying the invention;

FIGURE 2 is a side elevation of the upright chair embodiment shown in FIGURE 1;

FIGURE 3 is a rear elevation of a portion of the chair shown in FIGURE 2, viewed in the direction of line 3—3' in FIGURE 2;

FIGURE 4 is a front elevation of the upright chair after it has been folded by moving the supporting frames thereof into substantially co-planar relation;

FIGURE 5 is a view similar to FIGURE 4, showing the upright chair in its folded position after the leading portions of the leg elements of one of the chair sup-

porting frame members have been doubly folded to produce a compact folded assembly;

FIGURES 5A, 5B and 5C are partial side elevations of the upright chair, showing the successive stages of doubly folding the same from the assembly illustrated in FIGURE 4 to that shown in FIGURE 5, with the locking mechanism between the leading and trailing portions of the doubly foldable frame member, the fabric elements, and the head rest, deleted for clarity;

FIGURE 6 is a side elevation viewed in the direction of line 6—6' in FIGURE 4, showing a pivotal arm rest for the upright chair in its folded or collapsed position parallel to the chair supporting frame members;

FIGURE 7 is an end view taken in the direction of line 7—7' in FIGURE 5, showing one of the chair stop members which additionally serves as a latch for holding the leading and trailing portions of one of the chair frame members in their extended position;

FIGURE 8 is a perspective view of a further embodiment of the invention in a chaise longue;

FIGURE 9 is a schematic side elevation illustrating the forward and rearward limits of the rocking motion of the chaise longue of FIGURE 8, as well as a central intermediate rocking position thereof.

Turning to FIGURES 1 to 7 of the drawings, an upright chair embodying the invention is shown, which comprises a seat frame supported by a pair of supporting frame members, the seat frame supporting, in turn, a flexible fabric seat. The chair, indicated generally at **10**, includes a pair of generally rectilinearly shaped frame members **11** and **12**, member **11** having a U-shaped cross-section and including parallel leg elements **13** and a connecting base element **14** contacting a supporting surface **15** for the chair across substantially its entire length, and member **12** having a rectangular cross-section and including parallel leg elements **16** connected by a base element **17** and a top element **18**. In their operative positions, leg elements **13** and **16** of the frame members **11** and **12** lie in intersecting planes defining a supporting X-frame for the chair and the base elements **14** and **17**, which connect the leg elements of each frame member, are disposed in substantially parallel relation supporting the weight of the chair upon the supporting surface **15**.

A foldable bracing member or base linkage **20** is pivotally connected to the base elements **14** and **17**, respectively, at pivots **19** and **21** (See FIGURE 2). In the embodiment shown, the base linkage **20** includes a first link **22** having its outer end pivoted to base element **14** and a second link **23** having its outer end pivoted to base element **17**; the two links are preferably each constituted of splayed hairpin form wires. The links **22** and **23** are pivoted intermediate their ends by a hinge **24**. As best shown in FIGURE 2, the hinge **24** includes a pentroof **25** having approximately a 30° angle and a channel hinge pin containing member **26**. This hinge construction permits folding of the links **22** and **23** in one direction (upwardly of the position illustrated in FIGURE 2) but not in the opposite direction. Hence the base linkage, which is held under tension when the chair is disposed in operating position, folds in one direction to collapse the chair without jack-knifing.

It will be understood the tabular hinge **24** holding wire links **22** and **23** may, if desired, provide for relative lateral displacement of the wire links therein to accommodate manufacturing tolerances of the individual elements.

A generally U-shaped seat frame **27** is pivotally connected to the leg elements **13** and **16** of the respective frame members, defining an upper linkage connecting such members above the intersection of the planes defined by the leg elements in the operating position of the chair.

The supporting X frame thereby provided rocks about pivots **19** and **21** between the base linkage **20** and the base elements **14** and **17** of the respective frame members



**11** and **12**. By thus pivoting the leg elements just above the supporting surface **15**, rocking of the chair does not produce substantial leverage tending to produce "walking" or to dig the chair leg elements into the ground.

A fabric is sewn to or otherwise laterally secured to the frame member **27**, defining a seat portion **28** of the chair; similarly a fabric is laterally secured to the leg elements **16** of the frame member **12** between their pivotal connection with the seat frame **27** and up to and covering the top element **18** thereof, which fabric defines a back portion **29** of the chair. A supporting bar **30** is connected laterally of the seat frame **27** to provide additional support for the seat portion **28** of the chair.

It is frequently preferable to form the front rocking pivots between the seat frame **27** and the supporting frame member **11** by the extremities of the supporting cross bar **30**; in such cases, in place of a fixed member, the bar **30** is pivotally connected to the seat frame and the upper ends of the leg elements **13**, is bowed to provide clearance for the thighs of the user and is swingable upon folding of the chair to facilitate flat stowage. Such an alternative linkage may be supported solely by the lateral compression created by the seat frame **27** and the supporting frame member **11**, and provides a distinct saving in the cost of the chair **10**.

When positioned for use as shown in FIGURES 1 and 2 of the drawings, the user's weight pressing against the seat portion **28** and the back portion **29** places the leg elements **13** and **16** of the pivotally connected frame members under divergent forces, thereby placing the base linkage **20** under tension and maintaining the chair in secure stable position.

Stop members are provided for limiting the rocking motion of the chair about the pivots **19** and **21**, including a pair of front stop pins **31** and a rear stop strut **32**, the former pivotally attached to the leg elements **16** of the frame member **12**, as described hereinafter, and the strut **32** fixedly secured between the leg elements **16** of the frame member **12**. It will be understood that in place of employing a continuous strut **32** as a stop member, separate stop pins may be mounted on the respective leg elements **16** of frame member **12**, if desired. The stop members may also be provided by means of sleeves mounted on the leg elements of one of the frame members, as disclosed in my co-pending application Serial No. 71,227, now abandoned, instead of the configuration shown; however, for the reasons described hereinafter, it is preferred to employ a pivotally mounted stop pin **31** and a strut **32** as shown herein.

The stops **31** and **32** determine the limit of the pivotable arc through which the chair may rock in its operable position. When the chair is rocked forward to the limit of its rocking motion the leg elements **13** of frame member **11** engage the stop pins **31**, thereby preventing further rocking motion. When the chair is rocked backwards the leg elements **13** engage the stop strut **32** at the limit of the rocking arc, thereby preventing further movement backward and insuring the safety of the user of the foldable rocker.

When it is desired to fold the chair shown in FIGURES 1 to 7 for transport and storage thereof, the forward end of the seat frame **27** and the top element **18** of the frame member **12** are merely grasped and pulled toward one another, making the frame members **11** and **12** move toward one another. As the chair is folded the leg elements **13** of frame member **11** engage the stop strut **32**. In accordance with this invention, the leg elements **13** are preferably bent or offset at **33**, as are the leg elements **16** at **34**, whereby to facilitate folding of the leg elements relative to the stationary stop strut **32**. Hence when the leg elements **13** engage the stop strut **32** they are cammed by the curved surface **33** into substantially the same plane as the leg element **16** (see FIGURE 4).

While, by offsetting the stop pins from the axis of the

respective leg elements, it is possible to utilize straight leg elements, it is preferred to employ curved or bent leg elements described above to thereby provide a relatively compact folded structure while maintaining the pleasing aesthetic appearance of the operative chair.

Preferably, as shown in the drawings, the leg elements 16 of frame member 12 include leading portions 35 pivotally connected to trailing portions 36 thereof. The leading and trailing portions of the leg elements 16 are held in their extended position by latch members 37 which are normally engaged by the stop pins 31, maintaining the chair in its operative position.

When the chair is folded, with the frame members 11 and 12 disposed in substantially the same plane, the leading portions 35 of frame member 12 are disposed in the position shown in FIGURE 4. When it is then decided to produce a more compact assembly, the leading portions 35 are doubly folded, i.e. the pivoted stop pins 31 are pivoted from the position shown in FIGURES 4 and 7 into a position parallel with the trailing portions 36, as shown in FIGURE 5, thereby permitting pivoting of the leading portions 35 relative to the trailing portions 36 into juxtaposed relation (FIGURE 5).

In order to facilitate double folding of the chair assembly, the link 23 of the base linkage 20 is simultaneously mounted for pivotal movement with respect to the hinge 24.

The leading portions 35 of the leg elements of frame member 12 pivot about an axis aligned with the stop-strut 32 and the inner end of the link 23 simultaneously pivots about an axis which is parallel and adjacent to such axis, thereby rotating the hinge 24 from the position shown in FIGURE 5A to that in FIGURE 5B and finally to that illustrated in FIGURE 5C, in which the leading portions of the leg elements of frame member 12 are positioned in abutment with the trailing portions thereof and in which the chair is doubly folded into the compact fully collapsed assembly illustrated in FIGURES 5 and 5C.

The chair 10 shown in FIGURES 1 to 7 is provided with a pair of collapsible arm-rests 38 which are secured to the leg elements 16 of frame member 12 above their pivotal connection with seat frame 27, as by links 39 pinned to the leg elements. In its extended operative position each arm-rest 38 engages a stop pin 41 (FIGURE 2) integral with the adjacent leg element 16 and is cantilevered outwardly, substantially parallel to the seat portion 28 of the chair 10. When it is desired to fold the chair the arm-rests are pivoted outwardly to disengage them from pins 41 and are thereafter pivoted downwardly as indicated by the arrow 40 in FIGURE 2, into the position shown in FIGURE 6, wherein the arm-rest 38 is disposed substantially parallel and in abutting relation with the corresponding leg element 16 to provide a compact folded assembly.

The upright chair 10 is further provided with a head-rest 42 which may be removably secured to the chair if desired. As shown in FIGURES 1 to 3, the head-rest 42 comprises a U-shaped wire frame supporting a tensioned fabric, which frame terminates in wire loops 43 having outwardly directed wire elements 44. Elements 44 are received in fixed brackets 45 (FIGURE 3) suitably secured as by rivets at opposite ends of the top element 18 of the frame member 12. The end elements 44 of the head-rest 42 are simply removed from the brackets 45 and from the chair 10 by pressing the ends of the wire frame together.

When it is desired to employ the head-rest it is connected to the chair as described above and placed in the position shown in the drawings, in which the loop elements 43 of the head-rest frame engage the back of the top element 18 of frame member 12, mounting the head-rest 42 in position to support the user's head. When it is desired to fold the upright chair, the head-rest 42 is pivoted counterclockwise, viewing FIGURE 2, into the position shown in broken line at 42' in the drawing, in which the wire loops 43 are received over the top element 18 of the frame member and the head-rest 42 is disposed substantially parallel and in abutting relation with the back portion 29 of the chair. Hence the head-rest is readily folded into the folded chair assembly.

It will be understood that, if desired, a sun-shade may be connected to the top of the head-rest 42, employing a supporting structure such as that used to support the head-rest 42.

One preferred embodiment of the upright chair 10 shown in FIGURES 1 to 7 of the drawings has the following dimensions:

| | Inches |
|---|---|
| Length of seat frame 27 between pivotal connections with frame members 11 and 12 (13'–16') | 15 |
| Length of leg elements 16 from pivotal connections with seat frame 27 to pivots 21 | 18¼ |
| Length of leg elements 13 from pivotal connections with seat frame 27 to pivots 19 | 25 |
| Length of frame member 12 and head-rest 42 from top of head-rest to pivots 21 | 34½ |
| Length of base linkage 20 between pivots 19 and 21 | 15⅛ |

Upon folding the upright chair having the dimensions disclosed above, a folded chair assembly having a length of 26 inches, a width of 20½ inches and a thickness of only about 2½ inches is provided.

The deck chair or chaise longue 50 embodying the present invention is shown in FIGURES 8 and 9 of the drawings. While, as noted above, the upright chair 10 contains a seat portion 28 and a back portion 29 secured at their lateral edges to the seat frame 27 and the frame member 12, respectively, the chaise longue 50 includes a single flexible sheet 51 supported by the frame member 12 at its upper end, by a laterally extending fabric support 60 intermediate its ends and by the frame member 11 at its lower end, the weight of the user of the chaise placing the sheet in tension.

An upper cross bar or tube 52 of the frame member 12 is provided with a concave depression 53 (FIGURE 8) extending rearwardly of the frame member. Desirably, the cross tube 52 possesses a flattened elliptical cross section, in order that if the tension on sheet 51 permits contact of the user's head with the tube 52, localized high pressures are not created, as would be created were the cross tube constituted of a round cross-section tube. By providing a depression or recess in the cross tube 52, the user's head is cupped by the sheet 51 over an area corresponding to the depression, thereby facilitating linear contact of the user's head with about 5 inches or more of the sheet surface. Moreover, this configuration of the cross tube 52 permits the user's head to fall back to a position about 2 inches behind his shoulder line, thus creating a more comfortable support than were a uniformbly tensioned and supported back-rest provided.

The frame member 11 is pivotally connected to the frame member 12 by means of arm-rests 54, which may also include clamps 55 for engaging the leg elements of the frame members in folded relation to produce a self-supporting folded assembly. Frame member 11 is provided with an upper cross tube 56 having a pair of downwardly extending concave depressions or recesses 57 formed therein, approximately conforming to the cross-sectional shape of the under part of the user's thighs. The depressions in the cross tube 56 are provided by forming such tube with a protuberance in the center thereof; preferably the cross tube 56 is covered with a suitable elastomeric padding, such as a polyurethane foam, to further cushion the thighs of the user.

The cushioning of the user's thighs is further enhanced by reducing the linear length of the sheet 51 at its outer selvage edges and adjacent the central protuberance of the cross tube 56. In this manner greater slack is

left in the sheet **51** in the areas aligned with the depressions **57** in cross tube **56**.

The sheet **51** is secured to the cross tubes **52** and **56** described above by sheet gripper plates **52'** and **56'**, respectively. The gripper plates secure the sheet **51** at the upper surfaces of the cross tubes, thereby eliminating the 4 or 5 inch negative support area adjacent such tubes as would exist were the sheet looped around the cross tubes to create effective forces at the tube center lines rather than at their upper surfaces.

Preferably, a U-shaped foot-rest frame **58** is pivoted at **59** to the frame member **11** at a point adjacent the cross tube **56**. The foot-rest frame is pivoted over cross tube **56** whereby to engage and lock with the same in its extended position and thereby support the feet of the user. When it is desired to fold the chaise longue **50**, the foot-rest frame **58** is pivoted clockwise, viewing FIGURE 8, substantially into the plane of the frame member **11** for folding of the chaise assembly.

If desired, wedge shaped members may be provided associated with the pivotal connection between the foot-rest frame **58** and the frame member **11** to vary the angle of the foot-rest with respect to the main frame comprised of frame members **11** and **12** of the chaise, and thereby increase the contour chair effect produced thereby.

As shown in FIGURE 8, the foot-rest includes a foot supporting fabric **61** connected laterally across the frame **58**, upon which the feet may rest without effort, and a foot-rest member **62**, to accommodate shorter limbed individuals.

The rocking arc of the chaise longue **50** is determined by rearward stop pins **63**, which define the limit of the rearward rocking movement of the chaise, and forward stops **64** defined by the wedge shaped upper surfaces of a V-brace **65** secured to the base element **17** and leg elements **16** of the frame member **12**. Use of the V-shaped brace **65** to provide the forward stop **64** not only limits the rocking motion of the chaise longue but additionally serves to secure the folded chair against movement of the individual elements thereof.

FIGURE 9 illustrates the rocking motion of the chaise longue **50** relative to the stop members **63** and **64**. As shown in full line in FIGURE 9 at A–B, the chaise is disposed with the frame members **11** and **12** intermediate the stops **63** and **64**, freely rockable therebetween. As shown in broken line at A'–B', when rocked to the rear the frame member **11'** engages stop pins **63** preventing further rocking motion of the chaise. As shown in dotted line at A''–B'', when the chaise is rocked forward it reaches a limiting position at which the frame **12''** engages the front stop members **64**, preventing further forward movement of the chaise longue.

One preferred embodiment of the chaise longue **50** shown in FIGURES 8 and 9 has the following dimensions:

| | Inches |
|---|---|
| Length of arm-rests **54** between pivotal connections **13'** and **16'** | 19 |
| Length of leg elements **16** between pivotal connections **16'** and pivots **21** | 22 |
| Length of leg elements **13** between pivotal connections **13'** and pivots **19** | 27⅜ |
| Length of frame member **12** from cross tube **52** to pivots **21** | 47 |
| Length of frame member **11** from cross tube **56** to pivots **19** | 31 |
| Length of base linkage **18** between pivots **19** and **21** | 21¼ |

Upon folding this chaise, utilizing the double fold shown in FIGURE 5, a compact assembly having a length of 32 inches, a width of 24 inches and a thickness of only about 3 inches is provided.

In accordance with the present invention, a foldable rocking chair is thus provided which provides smooth rocking action, does not "walk" or dig into the ground or other supporting surface upon rocking, and which may be readily folded into a compact assembly for transport or storage. Since certain changes may be made in the rocking chair of this invention without departing from the scope thereof it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.



I claim:

1. A chair comprising:

(*a*) a pair of generally rectilinearly shaped frame members defining, in their operative positions, a supporting X-frame for the chair,

(1) the first of said frame members extending downwardly and rearwardly and including spaced parallel leg elements;

(2) the second of said frame members extending upwardly and rearwardly and including spaced parallel leg elements which elements have leading and trailing portions pivotally mounted with respect to one another;

(3) front and rear stop members mounted transversely of and connected to said second frame member, said front stop member extending below and in front of the intersection defined by the respective frame members in their operative positions and said rear stop member extending above and to the rear of the intersection defined by the frame members in their operative positions; and

(4) spaced parallel base elements connecting the leg elements of the respective frame members at the feet thereof, said base elements contacting the supporting surface for the chair across substantially their entire lengths;

(*b*) a foldable base linkage pivotally connected to the respective base elements of the pair of frame members and including a pair of links pivoted at their outer ends to the respective base elements and pivotally secured to one another at their inner ends, the leading portions of the leg elements of said second frame member and the inner ends of the links of said base linkage pivoting about adjacent and parallel axes, after folding the chair as set forth hereinafter, to fold said leading portions into juxtaposed relation with the trailing portions pivoted thereto; and

(*c*) an upper linkage connected to the leg elements of said frame members above the intersection defined by the frame members in their operative positions;

said chair being folded by drawing the upper portions of the pair of frame members toward one another, the rear stop member connected to the second frame member bearing against the leg elements of the first frame member and being guided thereby to fold the first and second frame members in juxtaposed, nested relation, the leading portions of the leg elements of said frame member being thereafter pivoted relative to the trailing portions thereof to doubly fold the chair into a compact, collapsed assembly.

2. The chair as set forth in claim 1, including a pair of collapsible arm rests connected to the spaced parallel leg elements of said second frame member above the points at which the upper linkage is connected to said elements, each of said arm rests being mounted by

(1) a link pivotally secured to the adjacent leg element of the second frame member; and

(2) a stop mounted on the leg element for engaging a mating end of the arm rest in the operative position thereof,

the link connecting the arm rest to the adjacent leg element providing for movement of the arm rest to clear said stop, thereby permitting the arm rest to be folded lengthwise of and in abutting relation with the leg element.

3. The chair as set forth in claim 1, in which said upper linkage constitutes a seat frame covered by a flexible material defining a seat portion of the chair, and in which a further flexible material engages the upper portion of said second frame member to define an independent back supporting portion of said chair.

4. The chair as set forth in claim 1, in which

(*a*) said first frame member includes a laterally extending cross tube connecting the leg elements thereof adjacent their upper ends, said upper cross tube defining a pair of intermediate spaced concavities and supporting an elastomeric material conforming to the contour of said cross-tube for supporting the thighs of the user;

(*b*) said second frame member includes a laterally extending second cross tube connecting the leg elements thereof adjacent their upper ends, said second cross tube defining a centrally disposed concavity contoured for supporting the head and shoulders of the user; and

(*c*) a supporting fabric is secured to and extends between said cross tubes to provide a unitary sheet support for both the seat and back portions of the user.

5. An upright chair comprising:

(*a*) a pair of generally rectilinearly shaped frame members defining, in their operative positions, a supporting X-frame for the chair,

(1) the first of said frame members extending downwardly and rearwardly and including spaced parallel leg elements;

(2) the second of said frame members extending upwardly and rearwardly and including spaced parallel leg elements;

(3) front and rear stop members mounted transversely of and connected to said second frame member, said front stop member extending below and in front of the intersection defined by the respective frame members in their operative positions and said rear stop member extending above and to the rear of the intersection defined by the frame members in their operative positions; and

(4) spaced parallel base elements connecting the leg elements of the respective frame members at the feet thereof, said base elements contacting the supporting surface for the chair across substantially their entire lengths;

(*b*) a foldable base linkage pivotally connected to the respective base elements of the pair of frame members, said frame members independently rocking about the pivotal connection between the base linkage and the respective base elements;

(*c*) a seat frame pivotally secured to the leg elements of the respective frame members above the intersection defined thereby in their operative positions;

(*d*) a flexible material engaging said seat frame to define a seat portion of the chair;

(*e*) a flexible material engaging the upper portion of the second frame member to define a back supporting portion of the chair; and



(*f*) a pair of collapsible arm rests connected to the spaced parallel leg elements of the second frame member above the points at which said elements are connected to said seat frame, each of said arm rests being pivotally mounted by

(1) a link connected to the adjacent leg element of said second frame member; and

(2) a stop mounted on the leg element for engaging a mating end of the arm rest in the operative position thereof,

the link connecting the arm rest to the adjacent leg element providing for movement of the arm rest to clear the stop therefor, thereby permitting the arm rest to be folded lengthwise of and in abutting relation to the leg element; the chair being folded by folding said arm rests into abutment with the leg elements of said second frame member, and drawing the upper portions of the pair of frame members toward one another, the rear stop member connected to the second frame member bearing against the leg elements of the first frame member and being guided thereby to fold the pair of frame members in juxtaposed, nested relation.

6. The upright chair as set forth in claim 5, in which

(*a*) the spaced parallel leg elements of said second frame member are constituted of leading and trailing portions pivotally mounted with respect to one another,

(*b*) said foldable base linkage includes a pair of links pivoted at their outer ends to the respective base elements of the first and second frame members and pivotally secured to one another at their inner ends, the leading portions of the leg elements of said second frame member and the inner end of the link of said base linkage connected to said second frame member pivoting about adjacent and parallel axes, after folding the chair, to fold said leading portions, into juxtaposed relation with the trailing portions pivoted thereto.

**References Cited** in the file of this patent

UNITED STATES PATENTS

| | | |
|---|---|---|
| 1,039,078 | Arnold | Sept. 24, 1912 |
| 1,694,933 | Walker et al. | Dec. 11, 1928 |
| 2,046,644 | Martin | July 7, 1936 |
| 2,048,147 | Staley | July 21, 1936 |
| 2,096,169 | Friesner | Oct. 19, 1937 |
| 2,285,925 | Handy | June 9, 1942 |
| 2,482,306 | Waldheim | Sept. 20, 1949 |
| 2,675,059 | Martin | Apr. 13, 1954 |
| 2,704,569 | Salzer | Mar. 22, 1955 |
| 3,011,826 | Bowring | Dec. 5, 1961 |

FOREIGN PATENTS

| | | |
|---|---|---|
| 25,818 | France | Feb. 13, 1923 |
| 126,733 | Austria | Feb. 10, 1932 |
| 824,377 | France | Nov. 10, 1937 |
| 677,907 | Great Britain | Aug. 27, 1952 |
| 67,943 | France | Oct. 14, 1957 |
| 1,193,133 | France | Apr. 27, 1959 |
| 1,216,459 | France | Nov. 30, 1959 |